WIRE CABLE TOBOGGANS.

AERIAL TRAMWAYS THAT CARRY ALL KINDS OF FREIGHT.

PARTICULARLY SUITED TO MOUNTAINOUS COUNTRIES—ORE, BANANAS, LOGWOOD, PROVISIONS, WATER AND COUNTLESS OTHER THINGS CARRIED UP AND DOWN STEEP GRADES.

Few people who have seen the automatic cash carriers in large mercantile establishments have any idea of the extent to which heavy freight is transported through the air by a somewhat similar system. On mountain sides whose irregular shapes and steep grades would make the construction of a surface road very costly, to say nothing of the operation of such a line, wire rope tramways are employed to carry gold or silver ore, coal and other minerals from the mine either to the stamp mill or to some connecting transportation line. On the Island of Trinidad hundreds of tons of asphalt travel in this manner from the loading station (over the great pitch lake) out to the pier, a mile away, where it is shipped to foreign countries. At Baracoa, Cuba, there is such a line fully two and one-half miles long, for the conveyance of bananas. Wheat is carried from elevator to mill in Minneapolis, wood pulp from one factory to another in Montreal, logwood from the mountains to a seaport in Hayti, all by the same method. In some instances, as at the paper mills of the Susquehanna Water Power and Paper Company, at Conowingo, Md., the shipments are made at a considerable elevation over a broad river, and occasionally the bulk of the traffic will traverse an upgrade, instead of coming downhill or moving horizontally.

There are two general systems of wire-rope tramways. In one there is but a single cable, which is endless and which passes around great sheaves or pulleys at the terminal stations. The buckets or cases in which merchandise is carried are suspended from this cable and attached to it by certain forms of grip. And there are lugs or knots in the cable at certain intervals, to keep the grip from slipping. Then there is a two-rope system. In the latter the upper, heavier cable is stationary, and serves as a track for the rollers of the moving pendant car, while the lower rope, which is a lighter one, is employed to do the hauling. This is moved either by a steam engine or by the weight of the cars themselves going downhill, and the cars are attached thereto by some sort of a clip. What is known as the Bleichert system, invented by Adolf Bleichert and now greatly in favor, belongs to this latter class. All rope tramways are double, however. There must be a return line as well as a main line. Consequently, the Bleichert system employs two "track cables," side by side three or four feet apart, and an endless hauling rope, which runs two or three feet below the track.

The supports for the cables are usually lattice towers, of steel or wood. Their height depends on circumstances. But as they are usually erected on some of the minor elevations along the slope, they may not be higher than twenty-five or fifty feet. The chasms and ravines which intervene, however, are often hundreds of feet deep. The placing of these towers is a task calling for great skill. When a line of this sort is laid out in mountainous regions care must be taken to avoid snowslides as far as possible. The distance between supports depends upon the contour of the country and the weight of the loads to be carried. Ordinarily the towers are from 150 to 200 feet apart. Occasionally, though, the intervals are much greater. The Conowingo line, just referred to, consists of two spans, each 1,700 feet long. The middle support of this tramway is a tower on an island in the Susquehanna River. But these figures are surpassed out in Colorado. The Silver Lake Mining Company has a single span in its line which is 2,200 feet (nearly half a mile) in length.

The track cables are blocked up at the very ends of a cross-timber on the tops of the supporting towers, so that the cars will swing entirely clear of the structure as they go by. To keep the hauling cables from sagging too much and getting afoul of something, they, too, are supported at the towers by means of broad, spool-shaped pulleys, placed several feet below the track.

The Trenton (N. J.) Iron Company, which controls the Bleichert system in this country, has introduced two important improvements on the original plan. One relates to the construction of the track cable. The latter is composed principally of steel wire of the best quality; but in each of the gaps between the outer strands is inserted a curiously furrowed rod, which serves a double purpose. It fills up the vacant space so as to make the surface of the cable smooth, thus reducing the friction between it and the carrollers that travel over it. Thus the life of the cable is enormously prolonged. This filling also locks the wires together, so that if one should by any accident break no end could escape, stick out and make mischief. It must lie down in its groove snugly if broken, as if continuous. The Trenton Iron Works (which are operated by Cooper, Hewitt & Co., of New-York City) have a special form of "locked coil" cable of their own. It represents the latest advances in this department of the art.

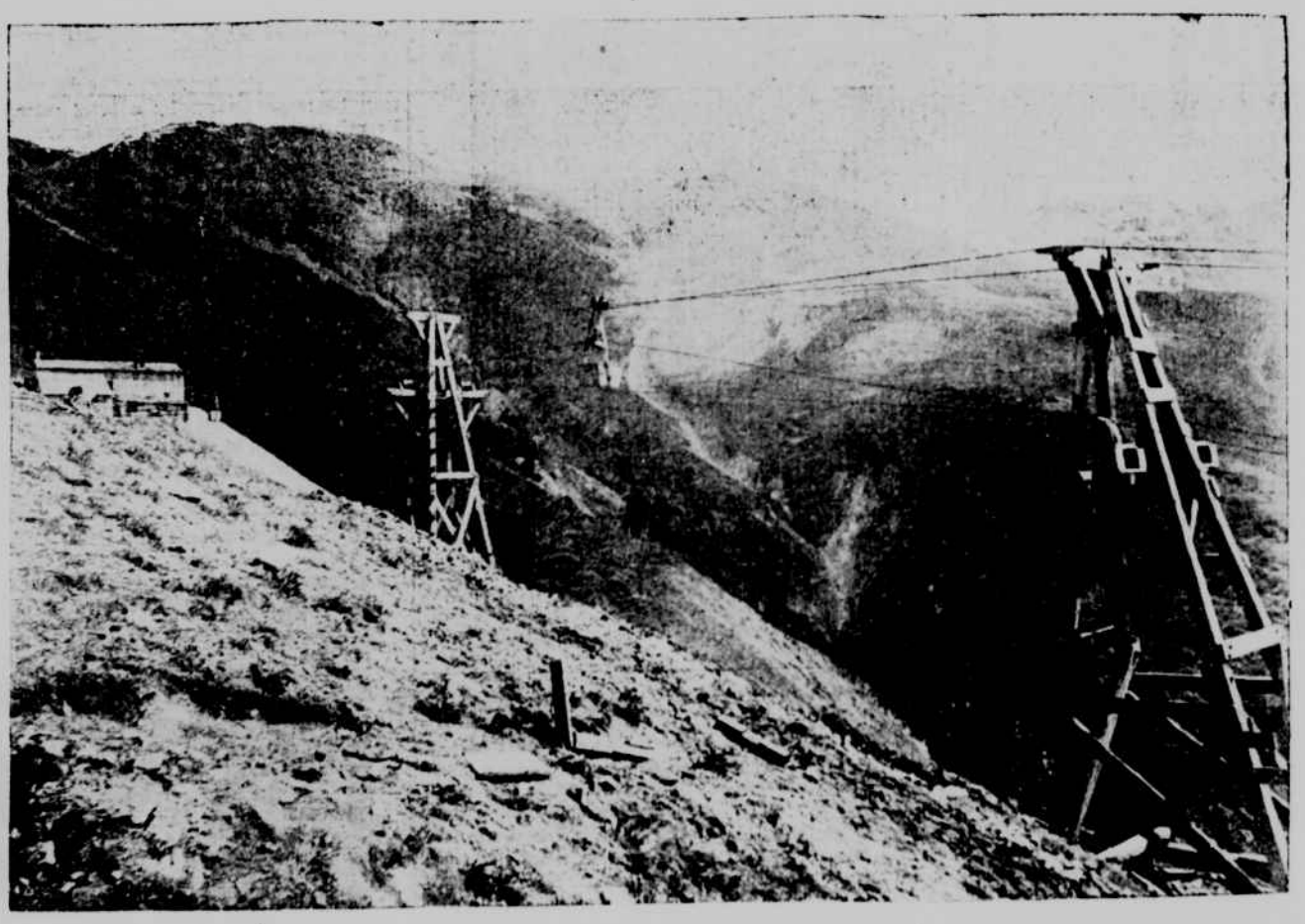
The track cable is made in different sizes, from a diameter of seven-eighths of an inch to an inch and a half, and in sections between 800 and 1,200 feet long. These are connected not by splicing, but by means of a special tubular coupler, which is only slightly larger than the cable, and which offers no embarrassment to the rollers which carry the cars.

Another excellent feature of the tramways constructed by Cooper, Hewitt & Co. is the "Webber compression grip," a device permanently attached to each car, and employed in hitching the latter to the running cable. In some systems it has been deemed necessary to put buttons or lugs on this rope to keep the grips from slipping. In consequence, the wear all comes at certain places. The new grip renders such appliances needless, and distributes the wear uniformly. Of course, under such circumstances the traction rope lasts very much longer. The Webber grip holds, it is said, on the steepest grades.

Wire-rope tramways are used on all sorts of slopes from one to forty-five degrees. Beyond the latter angle the operation would resemble hoisting more than it would hauling. The great majority of those lines have rather light grades; that is, somewhere between ten and twenty degrees. Even these, though, would be out of the question on steam and electric railways without a special form of rails and engine. The line which carries ore from the Gold King mine, in Gladstone, Col., down to the stamp mill falls 1,551 feet in a distance of 5,500 feet, or about one foot in three. There is a similar line at Cornucopia, Ore., which falls 2,000 feet in a distance of 5,000, or about one foot in two and a quarter. But the grade of different spans of a line is not always the same. The Granite Mountain Mining Company of Montana has a line which drops only 1,300 feet in a total length of 8,750, but most of this fall occurs within a 2,000-foot section.

It will be readily perceived that on steep grades the weight of the loaded cars going down will more than overbalance the "empties" going up on the other track. The difference, after all allowance for friction, often amounts to several horse-power. There is often something in the way of return freight—provisions for the miners, fuel or machinery. The Granite Mountain Mining Company sends only two hundred tons of ore down daily, and has at least one hundred tons of back freight. The tramway of the Macate Company, in Peru, has a very steep grade. It falls 4,950 feet (nearly 5,000) in a length of 10,450. About one hundred tons of ore are sent down each day, and a thousand gallons of water go back in the mean time. Where such tramways are nearly level, or carry their heaviest loads uphill, of course a steam engine or electric motor must be used to drive the traction rope. Some lines cross a "divide" and are partly uphill and partly downhill. The three-and-a-half mile tramway which has just been sent to Chilkoot Pass, to form a link in a longer transportation route for provisions and other merchandise, rises 2,000 feet between Sheep Camp and the summit, and then falls 500 feet during the short remaining portion of the line, which runs down to Crater Lake, 2,000 feet beyond.

The loads sent over such tramways vary from 500 to 1,500 pounds, exclusive of the car that takes them. In rare instances a full ton has been handled in a single load. The distance between the cars depends on circumstances. It may be as much as a thousand feet, or it may be only a hundred. But on every given line it is highly important that the cars should be spaced uniformly. It is customary, therefore, to have a gong struck automatically to indicate when a fresh car should be gripped to the moving rope. This latter task is performed by hand. But at the end of the route, whether going uphill or down, the cars are detached by a self-acting mechanism, and are often switched off to a side-track. The rope runs slowly, its speed seldom exceeding three or four miles an hour. Eighty tons an hour, or eight hundred tons in a working day, is about the maximum capacity of any of the wire-rope tramways now in service.



WIRE ROPE TRAMWAY FOR CONVEYING ORE AT GOLD KING MINE, GLADSTONE, COL.

PROBABLY JUST FROM CHICAGO.

From The Cleveland Plain Dealer.

The enviable reputation which Cleveland holds in educational circles is enlarged. Many's the time and oft that our citizens have laughingly read of the peculiar answers which scholars have given in the schools of other cities, complacently assuring themselves that nothing of that sort would happen in Cleveland. But an incident which occurred in one of the high schools—we will not designate which one, as Principal Harris might feel unduly complimented—will serve to advise us that some Chicago children must have been recently enrolled on our school list.

It happened in the English class. The question was: "Who was Dante?"

The scholar called upon arose and gave the startling information that "Dante was a Greek goddess."

"What were some of Dante's works?" asked the teacher.

"Paradise Lost."

QUEER OPTICAL ILLUSIONS.

EXTRAORDINARY EXPERIENCE OF THE OFFICERS AND CREW OF A FRENCH BARK OFF THE PHILIPPINES.

Paris correspondence, Courrier des Etats Unis.

Since the telegram signed by Messrs. Sokolov and Skidlovsky, announcing that on the night of October 5, while they were in the Usteyng district, they saw a balloon passing rapidly over the village of Yakovleu and drifting toward the forests in a southeasterly direction, many persons have "sighted" Andrée's balloon. Evidently it is a phantom airship that they have seen. Well-meaning people have affirmed that they saw Andrée's balloon floating over the White Sea. Others have seen it soaring over the State of Iowa, in the United States. Others again have seen it at North Cape, sometimes rushing along in a tempest at the south of the Disco Island, in Greenland, or soaring over Kotelly Island, in North Siberia; and among the latest reports is the one that announced its appearance over the village of Yakovleu.

All this goes to show that we are in the presence of a new phenomenon produced by the extreme suggestibility of the throng. Each individual is, without knowing it, in a constant state of expectation, and when an extraordinary affair, like the one with which we are dealing, is presented to the mind, the intensity of the impression is such that suggestion becomes easy, and, once formulated, it imposes itself immediately upon the mind of the masses by contagion.

The whole world followed with constant interest and emotion the preparations that were going on at the Island of Danois; but few people knew that spot, and it may be said that nobody knew what was going on there. Nevertheless everybody made a picture in his own mind of the place and of what was taking place there. When this image became impressed upon the mind its tendency from the very first moment was to transform itself into a reality. This is so true that a captain on a long voyage, with a perfectly sound and well-balanced mind, affirmed last year that he saw Andrée's balloon in August, 1896, northwest of Newfoundland, and several of the men of his crew also testified to the same thing with as much energy as honesty. And, as a matter of fact, Andrée was obliged to postpone his ascension until this year. He had not started in his balloon, and yet they saw him.

Examples of collective hallucinations are very numerous. Let us cite one that certainly is not generally known, and of which a lieutenant in the French Navy, M. Lestonnat, was the victim.

"In May, 1881," said he, "I was on board the bark Caroline. We had just left Hollo, in the Philippines, and we were travelling toward the Sunda Strait. One morning we were moving slowly, at the rate of about four or five knots, in a very light wind, when the man on the lookout shouted to me that he saw a pirogue or sharpie on the starboard quarter. Everything that we see at sea, however insignificant, is always interesting. Consequently, I placed myself in a position to see the object that the man reported. But, on account of the lower sails, I was obliged to go forward. From there I saw, at about two points to starboard, the pirogue, which seemed as if she was about to cross our bow. Suddenly the mate shouted: 'It is not a pirogue; it is a yawl boat.' Then the sailor came down from the rigging and reported that he saw distinctly a man standing in the boat and that he was making signals.

"'It is not necessary to be aloft to see that,' replied the mate. 'I can see him distinctly here.'

"After having observed the boat with attention, I saw as plainly as possible, and all the crew saw just as I did, a man making signals with something in his hand that we could not yet recognize, but which evidently was a gaff or an oar, at the end of which was fixed a piece of cloth.

"There was no longer any doubt. We had discovered an unfortunate shipwrecked man, whose vessel doubtless was lost upon the rocks of the shores called, if my memory serves me correctly, the Thousand Isles. I immediately reported to the captain, who took his glasses and followed me to the forward deck. He recognized, just as we did, a boat painted white, and in the bow there was a man dressed in a blue ganzy, who was waving an oar, at the end of which was fastened a piece of sailcloth.

"'That poor devil is lucky,' said the captain; 'for if we had had more wind yesterday we would have passed him in the night, and, of course, we could not have seen him.'

"But as the current was drawing the boat away from us, he gave the order to the man at the wheel to let the vessel fall off so as to get the boat well on our starboard. In this way we could easily reach it without the necessity of lowering a boat, which is always a tedious operation on board sailing vessels. The man, seeing that we were coming for him, ceased to signal, and sat down in the stern, and with his oar he steered the boat toward us. We could distinctly see the boat's mast was broken at about three or four feet above the sailing thwart. When she was about 300 metres from us, the captain, who was on the poop, asked the mate if everything was ready, and, on the latter's affirmative reply, he gave the order to head her up a little to starboard. At this moment the emotion on board the vessel was intense. The entire crew leaned over the rail. Then suddenly, as if we all had been aroused from a dream, the man and the boat turned into a block of pumice-stone on which were several branches of banana trees. After drifting slowly along the side of the vessel before the stupefied sailors, it vanished out of sight. The men were so utterly astonished that several of them could not help crying out, 'But, by jingo, there was a man on it, sure! We all saw him!'

"If the sea had been rough, so that we could not reach that little floating island, we would certainly have been convinced that a fellow creature had been left to perish.

"Nevertheless, our mind was free from all anterior preoccupation. Notwithstanding the spontaneity of the thing that had started it, the suggestion was none the less vivid. Its intensity was as strong in the mind of the officer as it was in the mind of each sailor; and this goes to prove that in the case of a crowd the mental quality of the individuals that compose it is without any importance."

After that, what is anybody to think of the fantastic news given to us about Andrée's balloon? Remember the suggestions of the siege of Paris, the signals seen at perfectly innocent windows, and the furious cavalry charges that the peasants could see at sunset in the sky.

UNAVOIDABLE DELAY.

From The Detroit Free Press.

"It's three-quarters of an hour since I ordered that turtle soup," snapped the angry guest at the restaurant.

"Yas, sah," said the waiter with an obsequious bow, "but de turtle done make his 'scape, sah, an' dey had to chase him 'bout a mile, sah."